

WHAT IS CLAIMED IS:

- 1 1. A tire air pressure monitoring system comprising:
2 a sensor unit mounted on a tire of a vehicle for measuring an air pressure
3 of said tire and for transmitting a signal including an air pressure measurement
4 value intermittently; and
5 a monitoring unit mounted on a body of said vehicle for receiving the
6 transmitted signal from said sensor unit to monitor an air pressure state of said tire
7 on the basis of said air pressure measurement value included in the transmitted
8 signal, said monitoring unit includes:
9 timing acquiring means for acquiring a transmission timing at
10 which a signal is transmitted from said sensor unit; and
11 mode switching means for, in synchronism with said signal
12 transmission timing acquired by said timing acquiring means, setting said
13 monitoring unit in a monitoring processing mode to receive the transmitted signal
14 and monitor said tire air pressure state and for setting said monitoring unit in a
15 sleep mode to rest its monitoring processing function for a period of time from
16 when monitoring processing in said monitoring processing mode reaches
17 completion until the next signal transmission timing.
- 1 2. The system according to claim 1, wherein said sensor unit is made to
2 transmit a signal including, in addition to said air pressure measurement value,
3 information on the next signal transmission timing, and said timing acquiring
4 means acquires a timing of transmission of a signal from said sensor unit on the
5 basis of the information on the next signal transmission timing.
- 1 3. The system according to claim 2, wherein said sensor unit is mounted on
2 each of tires of said vehicle and each of said sensor units is made to determine the
3 next signal transmission timing to make different signal transmission intervals at
4 random.

1 4. The system according to claim 3, wherein the different signal transmission
2 intervals of each of said sensor units are set to make a repeated transmission
3 interval pattern comprising a plurality of transmission intervals which have
4 different time lengths at random, and said timing acquiring means includes
5 storage means for storing said plurality of transmission intervals constituting said
6 transmission interval pattern for each of said sensor units.

1 5. The system according to claim 4, wherein said plurality of transmission
2 intervals to be stored in said storage means correspond to reception intervals at
3 which said monitoring unit receives the transmitted signals from said sensor units.

1 6. The system according to claim 1, wherein said sensor unit is mounted on
2 each of tires of said vehicle, and intervals at which said sensor units transmit
3 signals are set to differ from each other among said sensor units, and said timing
4 acquiring means stores said intervals of the signal transmission from each of said
5 sensor units to acquire a timing of the signal transmission from each of said sensor
6 units on the basis of the stored transmission intervals.

1 7. The system according to claim 6, wherein the signal transmission intervals
2 of each of said sensor units are set to have different time lengths at random to
3 make a repeated transmission interval pattern comprising a plurality of
4 transmission intervals.

1 8. The system according to claim 1, wherein said mode switching means sets
2 said monitoring unit in said sleep mode only when an ignition switch of said
3 vehicle is in an off condition.